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PAPER

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1 UNITED STATES PATENT AND TRADEMARK OFFICE

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3  
4 BEFORE THE BOARD OF PATENT APPEALS  
5 AND INTERFERENCES  
6

7  
8 *Ex parte* AKIRA KURAMORI and MITSURU NAITO  
9

10  
11 Appeal 2008-4536  
12 Application 10/529,495  
13 Technology Center 3600  
14

15  
16 Decided: December 04, 2008  
17

18  
19 *Before:* WILLIAM F. PATE, III, JENNIFER D. BAHR, and  
20 FRED A. SILVERBERG, *Administrative Patent Judges.*  
21  
22 SILVERBERG, *Administrative Patent Judge.*  
23

24  
25 DECISION ON APPEAL  
26

27 STATEMENT OF THE CASE

28 Appellants appeal under 35 U.S.C. § 134 (2002) from a Final Office  
29 Action of claims 1, 9, 13 and 14. We have jurisdiction under 35 U.S.C.  
30 § 6(b) (2002).  
31

32 SUMMARY OF DECISION

33 We AFFIRM.  
34  
35

THE INVENTION

The Appellants' claimed invention is directed to a tire and wheel assembly having a run-flat support inserted into a cavity section of a pneumatic tire. Claim 1, reproduced below, is representative of the subject matter on appeal.

1. A tire/wheel assembly having a run-flat support inserted into a cavity section of a pneumatic tire coaxially with a rim, wherein an outer peripheral surface of the run-flat support is coated with a resin layer, and microcapsules containing a lubricant are mixed in the resin layer.

THE REJECTION

The Examiner relies upon the following as evidence of unpatentability:

|          |              |               |
|----------|--------------|---------------|
| Peterson | US 3,809,442 | May 7, 1974   |
| Gerloff  | US 4,694,873 | Sep. 22, 1987 |

The following rejection is before us for review:

Claims 1, 9, 13 and 14 are rejected under 35 U.S.C. § 103(a) (2004) as being unpatentable over Gerloff in view of Peterson.

ISSUES

The issues before us are whether the Appellants have shown that the Examiner erred in rejecting claims 1, 9, 13 and 14 over Gerloff in view of Peterson. These issues turn on whether: (1) the Examiner has failed to

1 articulate a reason with rational underpinning to combine the teachings of  
2 Gerloff and Peterson; and (2) Peterson is non-analogous art.

3  
4 FINDINGS OF FACT

5 We find that the following enumerated findings are supported by at  
6 least a preponderance of the evidence. *Ethicon, Inc. v. Quigg*, 849 F.2d  
7 1422, 1427 (Fed. Cir. 1988) (explaining the general evidentiary standard for  
8 proceedings before the Office).

- 9 1. The Appellants' Specification discloses a tire/wheel assembly  
10 having a pneumatic tire 2, a run-flat support 3 inserted into a cavity  
11 section of the pneumatic tire coaxially with a rim 1, an outer  
12 peripheral surface of the run-flat support being coated with a resin  
13 layer 8, an inner surface of the tire being movable relative to and  
14 coming into contact with the outer peripheral surface of the run-flat  
15 support (Spec. p. 0027), and wherein microcapsules 9 containing a  
16 lubricant are mixed in the resin layer 8 (Spec. p. 0032, ll. 1 and 2)  
17 (Fig. 3).
- 18 2. The Appellants' Specification further discloses that the run-flat  
19 support 3 is metal (Spec. p. 0025, l. 2).
- 20 3. The Appellants' Specification still further discloses that the resin  
21 layer 8 has two convex portions (4a) (Spec. p. 0025, l. 4).
- 22 4. The Appellants' Specification still further discloses that as the  
23 resin layer is worn away during run-flat driving the lubricant is  
24 dispensed to suppress wear of the resin layer and the inner surface  
25 of the tire that contacts the resin layer during the run-flat driving  
26 (Spec. p. 0020, ll. 1-7 and p. 0032, ll. 2-5).

- 1        5.       Gerloff discloses a tire/wheel assembly for a vehicle having a  
2               pneumatic tire 1, a run-flat support 17 inserted into a cavity section  
3               of the pneumatic tire coaxially with a rim, wherein an outer  
4               peripheral surface of the run-flat support is coated with a resin  
5               layer 12 (friction strip) (Figs. 9 and 10).
- 6       6.       Gerloff further discloses that during an emergency operation the  
7               inner wall of the tire moves relative to the friction strip 12 from a  
8               position spaced from the friction strip to a position in contact with  
9               the friction strip 12 (Figs. 10 and 11) (col. 4, ll. 43-46).
- 10      7.       Gerloff still further discloses that the run-flat support 17, which is  
11               part of the wheel rim assembly, is preferably metal (col. 3, ll. 10  
12               and 18; col. 4, l. 51; and Figs. 9 and 10).
- 13      8.       Gerloff still further discloses that the resin layer 12 is made of  
14               polytetrafluoroethylene (PTFE) or any other suitable material (col.  
15               4, ll. 59-60).
- 16      9.       Peterson discloses a vehicle (snowmobile) 10 having a metal slide  
17               rail 18 surfaced by an elongated strip 21 of self-lubricating  
18               isocyanurate-lubricant bearing material which moves relative to  
19               and rides along the cleats 13 of the endless belt 22 (col. 2, ll. 52-  
20               57) (Fig. 2).
- 21      10.      Peterson further discloses that the lubricant is a resin containing  
22               microcapsules, which more effectively distributes the lubricant  
23               throughout the strip 21 (col. 5, ll. 6-45, in particular, l. 26).
- 24      11.      Peterson still further discloses that the isocyanurate-lubricant  
25               surfaces are long wearing (col. 2, l. 12).

PRINCIPLES OF LAW

Appellants have the burden on appeal to the Board to demonstrate error in the Examiner's position. *See In re Kahn*, 441 F.3d 977, 985-86 (Fed. Cir. 2006) ("On appeal to the Board, an applicant can overcome a rejection [under § 103] by showing insufficient evidence of *prima facie* obviousness or by rebutting the *prima facie* case with evidence of secondary indicia of nonobviousness.") (quoting *In re Rouffet*, 149 F.3d 1350, 1355 (Fed. Cir. 1998)).

"Section 103 forbids issuance of a patent when 'the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.'" *KSR Int'l Co. v. Teleflex Inc.*, 127 S. Ct. 1727, 1734 (2007). The question of obviousness is resolved on the basis of underlying factual determinations including (1) the scope and content of the prior art, (2) any differences between the claimed subject matter and the prior art, (3) the level of skill in the art, and (4) where in evidence, so-called secondary considerations. *Graham v. John Deere Co.*, 383 U.S. 1, 17-18 (1966). *See also KSR*, 127 S. Ct. at 1734 ("While the sequence of these questions might be reordered in any particular case, the [*Graham*] factors continue to define the inquiry that controls.")

In *KSR*, the Supreme Court emphasized "the need for caution in granting a patent based on the combination of elements found in the prior art," *id.* at 1739, and discussed circumstances in which a patent might be determined to be obvious. In particular, the Supreme Court emphasized that "the principles laid down in *Graham* reaffirmed the 'functional approach' of

1 *Hotchkiss*, 11 How. 248.” *KSR*, 127 S. Ct. at 1739 (citing *Graham*, 383  
2 U.S. at 12), and reaffirmed principles based on its precedent that “[t]he  
3 combination of familiar elements according to known methods is likely to be  
4 obvious when it does no more than yield predictable results.” *Id.* The Court  
5 explained:

6           When a work is available in one field of endeavor,  
7           design incentives and other market forces can  
8           prompt variations of it, either in the same field or a  
9           different one. If a person of ordinary skill can  
10          implement a predictable variation, § 103 likely  
11          bars its patentability. For the same reason, if a  
12          technique has been used to improve one device,  
13          and a person of ordinary skill in the art would  
14          recognize that it would improve similar devices in  
15          the same way, using the technique is obvious  
16          unless its actual application is beyond his or her  
17          skill.

18 *Id.* at 1740. The operative question in this “functional approach” is thus  
19 “whether the improvement is more than the predictable use of prior art  
20 elements according to their established functions.” *Id.*

21           The Supreme Court stated that there are “[t]hree cases decided after  
22 *Graham* [that] illustrate the application of this doctrine.” *Id.* at 1739. “In  
23 *United States v. Adams*, ... [t]he Court recognized that when a patent claims  
24 a structure already known in the prior art that is altered by the mere  
25 substitution of one element for another known in the field, the combination  
26 must do more than yield a predictable result.” *Id.* at 1739-40. “*Sakraida*  
27 *and Anderson’s-Black Rock* are illustrative – a court must ask whether the  
28 improvement is more than the predictable use of prior art elements according  
29 to their established function.” *Id.* at 1740.

1       The Supreme Court stated that “[f]ollowing these principles may be  
2       more difficult in other cases than it is here because the claimed subject  
3       matter may involve more than the simple substitution of one known element  
4       for another or the mere application of a known technique to a piece of prior  
5       art ready for the improvement.” *Id.* The Court explained:

6               Often, it will be necessary for a court to look to  
7               interrelated teachings of multiple patents; the  
8               effects of demands known to the design  
9               community or present in the marketplace; and the  
10              background knowledge possessed by a person  
11              having ordinary skill in the art, all in order to  
12              determine whether there was an apparent reason to  
13              combine the known elements in the fashion  
14              claimed by the patent at issue.

15      *Id.* at 1740-41. The Court noted that “[t]o facilitate review, this analysis  
16      should be made explicit.” *Id.* (citing *In re Kahn*, 441 F.3d 977, 988 (Fed.  
17      Cir. 2006) (“[R]ejections on obviousness grounds cannot be sustained by  
18      mere conclusory statements; instead, there must be some articulated  
19      reasoning with some rational underpinning to support the legal conclusion of  
20      obviousness”)). However, “the analysis need not seek out precise teachings  
21      directed to the specific subject matter of the challenged claim, for a court  
22      can take account of the inferences and creative steps that a person of  
23      ordinary skill in the art would employ.” *Id.*

24       The Federal Circuit recently concluded that it would have been  
25      obvious to combine (1) a mechanical device for actuating a phonograph to  
26      play back sounds associated with a letter in a word on a puzzle piece with  
27      (2) an electronic, processor-driven device capable of playing the sound  
28      associated with a first letter of a word in a book. *Leapfrog Ent., Inc. v.*  
29      *Fisher-Price, Inc.*, 485 F.3d 1157, 1161 (Fed. Cir. 2007) (“[a]ccommodating



1 a prior art mechanical device that accomplishes [a desired] goal to modern  
2 electronics would have been reasonably obvious to one of ordinary skill in  
3 designing children's learning devices"). In reaching that conclusion, the  
4 Federal Circuit recognized that "[a]n obviousness determination is not the  
5 result of a rigid formula disassociated from the consideration of the facts of a  
6 case. Indeed, the common sense of those skilled in the art demonstrates why  
7 some combinations would have been obvious where others would not." *Id.*  
8 at 1161 (citing *KSR*, 127 S.Ct. 1727, 1739 ("The combination of familiar  
9 elements according to known methods is likely to be obvious when it does  
10 no more than yield predictable results.")). The Federal Circuit relied in part  
11 on the fact that Leapfrog had presented no evidence that the inclusion of a  
12 reader in the combined device was "uniquely challenging or difficult for one  
13 of ordinary skill in the art" or "represented an unobvious step over the prior  
14 art." *Id.* (citing *KSR*, 127 S.Ct. at 1740-41).

15 The analogous-art test requires that the Board show that a reference is  
16 either in the field of the applicant's endeavor or is reasonably pertinent to the  
17 problem with which the inventor was concerned in order to rely on that  
18 reference as a basis for rejection. References are selected as being  
19 reasonably pertinent to the problem based on the judgment of a person  
20 having ordinary skill in the art. *In re Kahn*, 441 F.3d 977, 986-87 (Fed. Cir.  
21 2006).

## 22 ANALYSIS

23  
24 Appellants argue claims 1, 9, 13 and 14 as a group. As such, we  
25 select claim 1 as representative of the group, and claims 9, 13 and 14 will  
26 stand or fall with claim 1. 37 C.F.R. § 41.37(c)(1)(vii) (2007).

Gerloff discloses a tire/wheel assembly having a pneumatic tire 1, a metallic run-flat support 17 (Fact 7) inserted into a cavity section of the pneumatic tire coaxially with a rim, an outer peripheral surface of the run-flat support is coated with a resin layer (friction strip) 12 (Fact 5); an inner wall of the tire being movable relative to the friction strip 12 (Fact 6); and wherein the resin layer 12 is made of PTFE or any other suitable material (col. 4, ll. 59-60) (Fact 8). Gerloff differs from the claimed subject matter in that it does not disclose the use of lubricant containing microcapsules in the resin layer. Peterson teaches using a self-lubricating isocyanurate-lubricant bearing material (Fact 9) containing microcapsules (Fact 10) on one (metal) element of two relatively moving elements (13, and 18/21) to more effectively distribute the lubricant throughout the strip 21 (Fact 10) and to provide the one element with a long wearing surface (Fact 11). We conclude that to combine the teachings of Gerloff and Peterson, as set forth by the Examiner (Ans. 3, and Final 2 and 3), by substituting a self-lubricating material having microcapsules formed therein for the PTFE friction strip would have been obvious at the time the invention was made to a person having ordinary skill in the art as a simple substitution of one known element for another to obtain a predictable result. Alternatively, in *KSR* the Supreme Court held that if a technique has been used to improve one device and a person of ordinary skill in the art would recognize that it would predictably improve similar devices in the same way, using the technique is obvious. *See KSR* at 1740.

Appellants argue that the detailed workings of a snowmobile are not generally known to designers in the tire/wheel industry and that “common sense” leads to the conclusion that a designer of the present invention would

1 not be aware of lubricants used on conveyor belts (Br. 6 and 7). Peterson's  
2 snowmobile is a motorized vehicle wherein sliding friction of rubber-like  
3 materials is a significant operational problem. Thus, the friction reducing  
4 techniques taught therein are reasonably pertinent to the problem Appellants  
5 are concerned with.

6 Appellants still further argue that the problem they are addressing is  
7 reducing wear on the resin layer and not reducing friction as stated by the  
8 Examiner (Ans. 5) (Reply Br. 1). We find that the problem addressed by  
9 Peterson is providing a long wearing surface (Fact 11), which is the same  
10 problem as addressed by Appellants. Further, as Appellants' resin layer 8  
11 and Peterson's strip 21 have increased lubrication on the surfaces due to  
12 microcapsules, they both also solve the problem of reducing friction and  
13 friction induced wear. Therefore, we find that Peterson is analogous art.  
14

#### 15 CONCLUSION OF LAW

16 We conclude that the Appellants have not shown that the Examiner  
17 erred in rejecting claims 1, 9, 13 and 14 under 35 U.S.C. § 103(a) as being  
18 unpatentable over Gerloff in view of Peterson, (1) as the Examiner has  
19 articulated a reason with rational underpinning to combine the teachings of  
20 Gerloff and Peterson; and (2) Peterson is analogous art.

#### 22 DECISION

23 The decision of the Examiner to reject claims 1, 9, 13 and 14 over  
24 Gerloff in view of Peterson is affirmed.

25 No time period for taking any subsequent action in connection with  
26 this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv) (2007).

Appeal 2008-4536  
Application 10/529,495

1

2

AFFIRMED

3

4 JRG

5

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